

REMARKS

As a result of this amendment, claim 1, 12, 13, 18, 24, and 25 have been amended and claims 5 and 6 have been canceled.

Allowable Subject Matter

The Applicant gratefully acknowledges the Examiner's determination that claims 10, 11, 20-22, 25, and 26 would be allowable if rewritten in independent form and including all the limitations of the base claim and any intervening claims.

Objections to the Specification

The Examiner has objected to the grouping of figures in the Brief Description of the Drawings section. The specification has now been amended to overcome the Examiner's objection.

Claim Rejections -- 35 USC §112

The Examiner has rejected claims 12 and 13 based on 35 USC §112, second paragraph. Claims 12 and 13 have now been amended per the Examiner's recommendation.

Claim Rejections -- 35 USC §103

The Examiner has rejected claims 1, 3-7, 9, and 14-16 under 35 USC §103(a) as being unpatentable over PCT '761 in view of Lindblom et al (5,423,640).

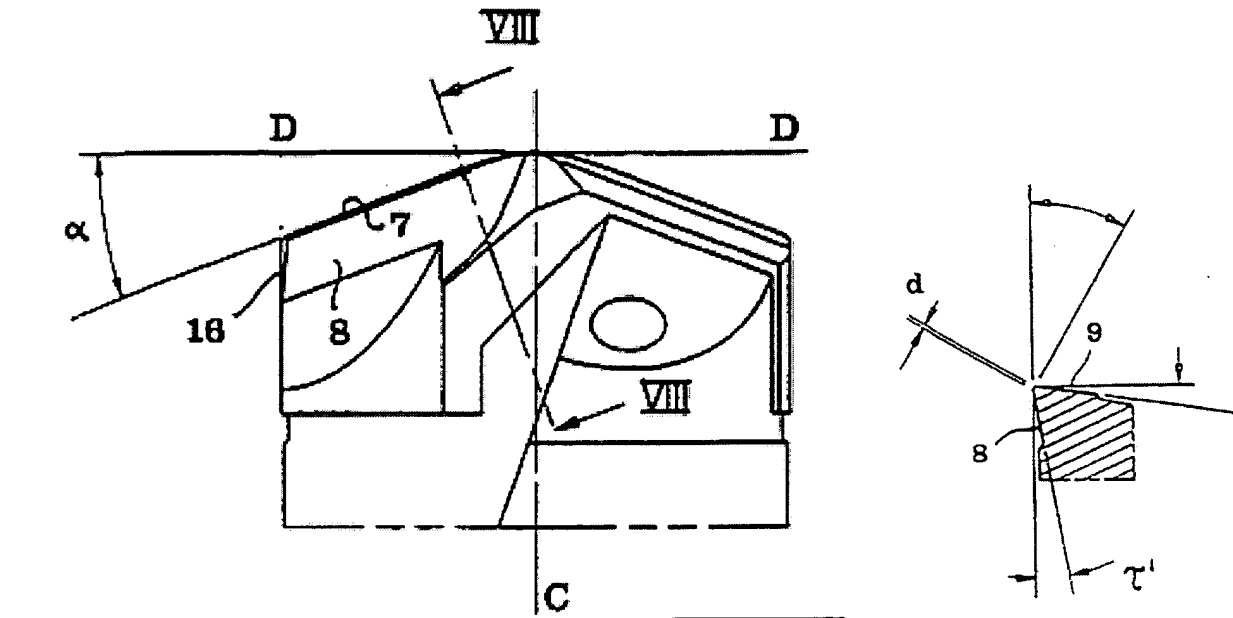
The Examiner has rejected claims 1-8, 13, 14, 18, 19, 23, 24, and 27-30 under 35 USC §103(a) as being unpatentable over Heule (6,551,036) in view of Lindblom et al (5,423,640).

The Examiner has rejected claims 15-17 under 35 USC §103(a) as being unpatentable over Heule (6,551,036) and Lindblom et al (5,423,640) in further view of Mast (6,685,402).

The Examiner has rejected claims 1-7, 9, 13-19, 24, and 27-30 under 35 USC §103(a) as being unpatentable over Reinauer et al (5,599,145) in view of DeWald, Jr. et al (6,371,702).

The Applicant traverses the Examiner's argument for at least the following reasons:

LINDBLOM '640



Element 8 of Lindblom is a planar surface as shown in Fig. 3 of the patent (left) and detail Fig. 8 of the patent (right). Element 8 is not a trough as asserted in the rejection. The cross-section VIII-VIII shown in Fig. 3 is taken through the web thinning notch which is the reason for the step in the cross-sectional detail view of Fig. 8.

The claims of the present invention require a groove having a trough:

Claim 1 and 24, as amended, require - "at least two grooves formed transverse to each other, each of the at least two grooves formed in one of the face sides adjacent to the second end of the drill body and intersecting the second end of the drill body to form one of the main cutting edges, each groove having a trough, wherein at least a portion of the trough is curved"

Claim 18 requires - "a groove formed in each face side of the drill insert body adjacent the cutting edge, the groove having a trough, wherein at least a portion of the trough is curved and a plane formed through the trough is substantially parallel to a plane formed through the adjacent curved cutting edge."

Lindblom's element 8 is a planar surface - not a groove and not a trough of a groove.

Accordingly, the applicant believes that all obviousness rejections based on Lindblom have been overcome.

DeWALD, JR. '702 and REINAUER '145

Reinauer '145 has curved cutting edges formed by helical flutes extending the axial length of the insert.

DeWald Jr. '702 shows a standard spade drill groove having a straight cutting edges formed by a straight groove and associated straight trough. The cutting edges and associated trough of the groove are not curved at any point as required by the claims of the present invention, as amended.

Motivation for combination not valid - It is stated in the rejection that it would have been obvious to use the trough of DeWald with the insert of Reinauer in order to provide a positive axial cutting edge. However, the insert of Reinauer has axially helical flutes such that a positive axial cutting edge is already provided by the geometry of Reinauer.

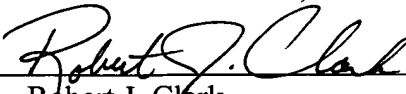
Claims now amended over DeWald - The claims, as currently amended, require that the trough of the groove is curved. The trough of the groove of DeWald is straight.

Combination impossible - The combination of the straight groove of DeWald with the helical flutes of Reinauer will not result in the present invention. The straight groove as disclosed by DeWald will result in a straight cutting edge when machined into the insert face. In order to achieve a curved cutting edge against a clearance plane, a groove with a curved trough is required as disclosed by the present invention.

Accordingly, the Applicant believes that the rejection based on the combination of Reinauer and DeWald has been overcome.

Prompt consideration of this application and allowance of the claims are requested. If the examiner should have any question regarding this application or the amendment, a call to applicant's attorney would be appreciated.

Respectfully submitted,
HAHN LOESER & PARKS, LLP

By 
Robert J. Clark
Reg. No. 45,835
Tel.: (330) 864-5550
Fax: (330) 864-7986